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NOTES AND DESCRIPTIONS OF NORTH AMERICAN BOMBYLIDÆ.

BY D. W. COQUILLET.

On pages 34 to 37 of his "Synopsis of the Families and Genera of North American Diptera," Dr. S. W. Williston gives a table of the genera of Bombylidæ, remodeled from that of the Baron Osten Sacken, published in "Biologia Centrali-Americana," Part Diptera, pages 75 to 77. As this table does not include all of the genera occurring in this country north of Mexico, I have constructed an entirely new table, comprising all of the Bombylid genera so far known to occur in this region. Before presenting this table, a few notes on some of the proposed genera may not be out of place here.

Dipalta, *Stonyx* and *Isopenthes*.—These three genera of Osten Sacken are founded upon specimens of *Anthrax* having three submarginal cells in each wing, the anterior branch of the third vein being connected with the second by a cross-vein. The examination of a large series of specimens taken at the same time and place reveals the fact that the presence or absence of this cross-vein is not a specific character, and therefore cannot be used for the separation of genera. My collection contains specimens of the following species of *Anthrax* in which this cross-vein, although absent in the majority of cases, is present in rare instances: *Anthrax caprea*, *A. syrtis*, *A. willistoni*, *A. junctura*, *A. sinuosa* and *A. nugator*. Except in the possession of this cross-vein, these specimens are indistinguishable from those in which it is absent. Indeed, Osten Sacken remarks that his *Isopenthes jænnickeana*, "apart from the presence of this cross-vein, differs very little from *Anthrax sinuosa*" ("Biol. Cent.-Am." Diptera, page 129). Not only is the presence of this cross-vein of no importance in the different species of *Anthrax*, but this is also true of other genera related to *Anthrax*. Thus my collection contains specimens of the following species in which this cross-vein, although normally absent, is present in one or more instances: *Mancia nana*, *Argyramæba pauper*, *A. daphne* and *A. varia*; while specimens of the following species have this cross-vein present in one wing but absent in the other; *Lepidanthrax campestris*, *An-*

thrax morio and *Mancia nana*. These latter specimens prove very conclusively that this cross-vein is adventitious, and therefore not to be relied upon as a generic character. It therefore follows that the proposed genera *Dipalta*, *Stonyx* and *Isopenthes*, must be regarded as synonyms of *Anthrax*.

It may be remarked that those specimens of *Anthrax* in which this cross-vein is present can readily be distinguished from the genus *Exoprosopa*, which also has such a cross-vein, by the fact that the third joint is not furnished with a distinct terminal style, which is present in the last-named genus, and is separated from the third joint by a distinct, transverse suture.

Hemipenthes.—This was founded upon a species of *Anthrax* having distinct pulvilli, but in establishing this genus Dr. Loew overlooked the fact that the type of the genus *Anthrax* (the European *A. morio*) also possesses distinct pulvilli, and, indeed, was one of the species mentioned by him as being a type of his genus *Hemipenthes*; it will thus be seen that these two genera, having the same species as the type, are one and the same, *Hemipenthes* giving way to *Anthrax*, which has priority.

Triodites is a synonym of *Aphæbantus*, as stated by the writer in the May number of the "Canadian Entomologist" for the year 1886.

Lomatia elongata Say forms the type of a new genus, *Agnotomyia* Williston, which this author refers to the Leptidæ.

Leptochilus being pre-occupied in the Hymenoptera, has been changed to *Epaemus* by Osten Sacken. This genus cannot be separated from *Aphæbantus* by the absence of pulvilli, as the last-named author attempts to separate it in his table referred to above, but is easily distinguished by the strongly projecting, concave face, this in *Aphæbantus* being convex and more or less retreating.

Comastes O. S. is a synonym of *Heterostylum* Macq., which, by right of priority, must be retained.

Epibates O. S. is a synonym of *Thevenemyia* Bigot, which has been changed by its author to *Thevenetimyia* (Ann. Soc. Ent. de France, lxi, page 325).

Dischistus Loew and *Amictus* Wied. These two genera have not heretofore been recorded as occurring in North America, but in the last-mentioned work Bigot refers a single species from this region to each of these genera; his *Dischistus fuscipes* (l. c., page 369) appears to be the well-known *Sparnopolius fulvus* Wied., while his *Amictus auripilus* (l. c., 372) appears to belong to *Eclimus*.

Spogostylum Macq., a South American genus, and *Thlipsogaster* Rond., are now for the first time recorded from North America.

Three new genera are described in the present paper: *Aldrichia*, near *Eclimus*, but with three submarginal cells and the second and third veins forking near the small cross-vein; *Exepacmus*, near *Epacmus*, but with three submarginal cells and a different antennæ; and *Geminaria*, near *Lordotus*, but having the scutellum deeply sulcate longitudinally.

Genera of Bombylidæ from America North of Mexico.

- Second and third veins forking at or near the small cross-vein, the distance being never greater than the length of that cross-vein.....1.
 Second and third veins forking far before the small cross-vein and usually before the base of the discal cell.....9.
- 1.—Third antennal joint bisected by a suture, forming a distinct terminal style.....2.
 Third antennal joint never bisected by a suture, the style when present indistinct.....7.
- 2.—Pulvilli spine-like, indistinct; anterior branch of third vein connected with the second by a cross-vein.....3.
 Pulvilli pad-like, distinct.....5.
- 3.—Anterior branch of third vein near its middle connected with the third by a cross-vein.....**Hyperalonia.**
 Anterior branch never connected with the third vein by a cross-vein.....4.
- 4.—First posterior cell near its middle bisected by a cross-vein.....**Exoptata.**
 First posterior cell never bisected by a cross-vein.....**Exoprosopa.**
- 5.—Second antennal joint less than one-half as long as the third, the style bearing numerous hairs.....6.
 Second antennal joint as long as the third, the style destitute of hairs.
- 6.—Anterior branch of third vein near its middle connected with the third vein by a cross-vein.....**Spogostylum.**
 Anterior branch never connected with the third vein by a cross-vein.
- 7.—Anal cell widest near its middle, its apex less than half as wide as the length of the axillary cell.....8.
 Anal cell widest at its apex, where its width equals one-half the length of the axillary cell.....**Mancia.**
- 8.—Penultimate section of fifth vein at least two-thirds as long as the ultimate section, sides of abdomen furnished with long scales, front tibiæ bristly.
- Penultimate section of fifth vein less than two-thirds as long as the ultimate section.....**Anthrax.**

- 9.—Anterior branch of third vein connected with the second by a cross-vein forming three submarginal cells.....10.
 Anterior branch never connected with the second vein; only two submarginal cells.....15.
 10.—Wings with four posterior cells, anal cell open.....11.
 Wings with only three posterior cells, anal cell closed.

Rhobdopselaphus.

- 11.—First posterior cell open.....12.
 First posterior cell closed**Pantarbes.**
 12.—Body more or less pilose, tibiæ bristly.....13.
 Body naked, tibiæ destitute of bristles.....**Amphicosmus.**
 13.—Antennæ as long as the head, the third joint not longer than the first two taken together.....14.
 Antennæ less than one-half as long as the head, the third joint twice as long as the first two.....**Exepacmus** n. gen.
 14.—First antennal joint scarcely thicker than the second.....32.
 First antennal joint twice as thick as the second**Ploas.**
 15.—Wings with four posterior cells.....16.
 Wings with only three posterior cells, anal cell closed.....30.
 16.—First posterior cell open.....17.
 First posterior cell closed.....26.
 17.—Anal cell open.....19.
 Anal cell closed.....18.
 18.—Proboscis not projecting beyond the epistoma.....**Oncodocera.**
 Proboscis projecting far beyond the epistoma.....**Phthiria.**
 19.—Body more or less pilose, tibiæ usually bristly.....21.
 Body naked, tibiæ destitute of bristles.....20.
 20.—Ocellar tubercle situated near hind edge of the front, marginal cell strongly expanded at its tip.....**Paracosmus.**
 Ocellar tubercle situated near the center of the front, marginal cell only slightly expanded at its tip.....**Metacosmus.**
 21.—Antennæ and abdomen destitute of long scales.....22.
 Antennæ and abdomen provided with such scales.....**Lepidophora.**
 22.—Third antennal joint lanceolate, scarcely longer than the first.....23.
 Third antennal joint bulbous at the base, the remaining portion styliform, first joint not one-half as long as the third.....24.
 23.—Base of second submarginal cell almost opposite apex of discal cell, apex of second submarginal cell less than one-half as broad as the length of this cell, body elongate and slender.....34.
 Base of second submarginal cell far beyond apex of discal cell, apex of second submarginal cell as broad as the length of this cell, body short and rather robust.....**Sparnopolius.**
 24.—Third antennal joint much longer than wide, contracted into a style at least half as long as the thickened base.....25.
 Third antennal joint scarcely longer than wide, not contracted into a style at its apex.....**Eucessia.**
 25.—Face in profile concave, projecting forward below.....**Epacmus.**
 Face convex, retreating below.....**Aphæbantus.**
 26.—Anal cell open, proboscis projecting far beyond the epistoma.....33.
 Anal cell closed, proboscis retracted within the oral cavity.....**Oncodocera.**

- 27.—First basal cell longer than the second.....28.
 First basal cell only as long as the second.....29.
 28.—Lateral emargination of the occiput distinct; head large.

Heterostylum.

Lateral emargination of the occiput almost imperceptible; head small.

Bombylius.

- 29.—Pile of face dense, concealing from view the face and base of antennæ.

Anastoechus.

Pile of face sparse, not concealing the face from view.....**Systoechus.**

- 30.—Abdomen not narrowest at the base.....31.

Abdomen narrowest at the base, slender, nearly naked.....**Systropus.**

- 31.—Body clothed with more scales than hairs and curved semi-circularly.

Toxophora.

Body more hairy than scaly and nearly straight.....**Geron.**

- 32.—Scutellum deeply sulcate longitudinally.....**Geminaria** n. gen.

Scutellum convex, not sulcate.....**Lordotus.**

- 33.—First posterior cell closed far from the margin of the wing, last section of fourth vein curving forward before its apex.....27.

First posterior cell coarctate, or closed in or near the margin, last section of fourth vein straight.....**Thlipsogaster.**

- 34.—Thorax of male furnished with small tubercles.....**Thevenetimyia.**

Thorax destitute of tubercles.....**Eelimus.**

HYPERALONIA Rond.**Hyperalonia gayophylax** Loew.

Described as an *Exoprosopa*. Through the kindness of Mr. Samuel Henshaw, I have been put in possession of a drawing of the right wing of the type specimen; this shows, as I suspected, that several errors occur in Loew's original description (Dipt. Am. Sept., Cent. viii, No. 18). The apex of the marginal cell and the whole of the first submarginal, excepting its base and apex, are grayish hyaline, instead of being black, as stated in the description.

ALDRICHIA n. gen.

Antennæ nearly twice as long as the head, first joint slender, slightly shorter than the second, twice as long as broad, the second tapering slightly to the tip; third joint slightly shorter but wider than the second, greatly compressed, in outline nearly elliptical, but the tip contracted into a short, cylindrical styliform process; style apical, acuminate, one-third as long as the third joint. Face shorter than diameter of first antennal joint. Proboscis projecting nearly half its length beyond the epistoma, labellæ very large, nearly half as long as the proboscis; palpi nearly cylindrical, three-fourths as long as the proboscis. Thorax each side bearing two ante-alar macrochætæ; scutellum rounded behind. Abdomen nearly cylindrical.

two and a half times as long as wide. Wings having the anterior branch of the third vein connected with the second by a cross-vein, forming three submarginal cells; four posterior cells, all of them open, as is also the anal; furcation of the second and third veins occurs slightly before the small cross-vein, the distance equaling two-thirds the length of that cross-vein; first basal cell slightly longer than the second; marginal cell not greatly expanded at the apex. Tibiæ bristly, pulvilli large, empodium bristle-like.

Dedicated to Mr. J. M. Aldrich, who had recently taken up the study of our Diptera, and to whose kindness I am indebted for a specimen of this very interesting insect.

Aldrichia ehrmanii n. sp.—Wholly black, opaque, except the shining scutellum. Pile of upper part of front, face, antennæ, mouth parts and lower half of occiput, black, that on lower part of front and upper half of occiput largely white. Short pubescence of thorax and scutellum yellow, the longer pile and bristles black; pile of pleura white. Short pubescence of abdomen yellow, pile on middle of dorsum and on last segment black, that on sides of abdomen white. Wings blackish, darkest in costal, marginal and first basal cells, anal and axillary cells nearly hyaline. Length 9 mm.

Pennsylvania (Ehrman). Mr. Aldrich writes me that he has a second specimen which is identical with the one described above.

SPOGOSTYLUM Macq.

Spogostylum vandykei n. sp.—Black, the tibiæ brown, knob of halteres largely yellow. Pile of front in the female black, of face mixed yellow and black, in the male wholly yellow, that of the body in both sexes abundant, yellow; many on dorsum of abdomen black; scales of front, face, occiput and femora, yellowish white. Thorax and scutellum destitute of scales. Abdomen with a few black ones posteriorly; third antennal joint suddenly contracted into a slender style, which is scarcely longer than the thickened basal part; terminal style scarcely longer than broad; face much retreating below, proboscis not projecting; bristles of legs black, occurring on all femora and tibiæ, pulvilli very large. Wings in the female hyaline, costal cell and base of wing to discal cell yellowish, palest in apices of anal and axillary cells, a dark brown cloud at bases of first submarginal, first and fourth posterior cells; in the male, only the costal cell is yellow, a brown cloud at bases of first submarginal, first and fourth posterior, and of the discal cell; a stump of a vein near base of second vein and anterior branch of the third; the latter connected with the third by an oblique cross-vein. Length 10–12 mm.

California. One male and two females. The first specimen was collected in Mariposa County, in July, by Dr. E. C. Van Dyke, of this city, to whom it gives me pleasure to dedicate this interesting species; in April of the following year I was fortunate enough to capture a pair of specimens in one of the cañons on the border of

the Colorado Desert, in what was formerly San Diego, but is now Riverside, County.

ARGYRAMOEBA Schiner.

Argyramæba antecessens Walker is a synonym of *A. limatulus* Say, and *A. obsoleta* Loew is synonymous with *A. albofasciata* Macq. *A. albosparsa* Bigot (Ann. Soc. Ent. France, lxi, 348) appears to be the same as *A. argyropyga* Wied.

The following table contains all the species at present known to occur in this country north of Mexico:

- 1.—Costal cell unicolorous, never distinctly checkered.....2.
Costal cell checkered hyaline and black, wings containing more than fifteen
black spots.....**ædipus** Fabr.
- 2.—Wings largely hyaline.....3.
Wings wholly black.....**cephus** Fabr.
- 3.—Hyaline portion of wings containing black spots.....13.
Hyaline portion of wings destitute of black spots; base of wings black, the
apical portion hyaline.....4.
- 4.—Brown of wings reaches apex of first submarginal cell6.
Brown of wings does not reach apex of first submarginal cell.....5.
- 5.—Anal and axillary cells largely or wholly black.....15.
Anal and axillary cells largely hyaline.....**fur** O. S.
- 6.—Anal cell largely or wholly black, legs black... ..**argyropyga** Wied.
Anal and axillary cells largely hyaline, legs yellowish...**succincta** n. sp.
- 7.—Wings destitute of black spots beyond base of second submarginal cell...8.
Wings marked with one or more black spots beyond base of second submar-
ginal cell.....12.
- 8.—Second basal cell largely or wholly brown, a large brown spot at base of
second submarginal cell.....9.
Second basal cell, except its base and apex, hyaline.....10.
- 9.—With a large brown spot at base of second posterior cell...**limatulus** Say.
With at the most only a trace of such a spot.. ..**albofasciata** Macq.
- 10.—Anal cell with a brown spot near its middle, a large one at bases of second
submarginal and second posterior cells.....**varia** Fabr.
Anal cell destitute of a brown spot near its middle.....11.
- 11.—Tomentum of abdomen wholly white and yellow**daphne** O. S.
Tomentum of abdomen largely black.....**pauper** Loew.
- 12.—With only one black spot beyond base of second submarginal cell,
cybele n. sp.
With at least two black spots beyond base of this cell... { **stellans** Loew.
 pluto Wied.
- 13.—Wings containing fifteen black spots.....**melanopogon** Big.
Wings containing less than fifteen black spots.....14.
- 14.—Third posterior cell never bisected by a cross-vein.....7.
Third posterior cell bisected by a cross-vein; length of body 14 mm. and
over { **simson** Fabr.
 delila Loew.
- 15.—Pile of front end of thorax and of breast black.....**analís** Say.
Pile of front end of thorax and of breast white.....**gideon** Fabr.

Argyramœbe cybele n. sp.—Black, apex of knob of halteres white. Pile of head and body black, except many on front end of thorax, several on pleuræ, a cluster at hind corners of thorax and on sides of first abdominal segment, which are white; scales of head, thorax and scutellum yellowish white, mixed with black on the last two, those of abdomen black, on hind end of each segment white; styliform portion of third antennal joint scarcely longer than the thickened basal part; style as long as the styliform portion of the third joint; face greatly retreating below, proboscis not projecting; all femora and tibiæ bristly, pulvilli elongated but narrow. Wings hyaline, the base brown, the outline of this color extending from apex to auxiliary vein transversely in an undulatory manner to last fifth of discal cell, then basally nearly to small cross-vein, then zigzagging across discal and base of third posterior, then basally and across fourth posterior cell, then following penultimate vein nearly to its apex, then crossing anal and going through axillary cell nearly to its base; a hyaline spot near bases and another near apices of second basal, anal and axillary cells, two in marginal and in first basal, one in second submarginal, first posterior and discal cells; a brown cloud in marginal cell back of apex of first vein, another at bases of second submarginal and second posterior cells, another on vein between discal and third posterior cell, situated on a stump of a vein. Length 6 mm.

Southern California. Three specimens in May.

Argyramœba succincta n. sp.—Black, femora and tibiæ yellowish, knob of halteres largely light yellow. Pile of head black, the scales yellowish; pile and scales of body mixed black and yellowish, a stripe of black pile between humeri and wings; pile of sides of abdominal segments three to six long, very dense, black; pile of venter white; styliform portion of third antennal joint four times as long as the thickened basal part, style one-fourth as long as the styliform portion of the third joint; face much retreating below, proboscis not projecting; all femora and tibiæ bristly, pulvilli very small. Wings hyaline, front edge brown, beginning in apex of first submarginal cell, filling apex of marginal cell, then contracted to first vein, which it follows to a point nearly opposite apex of discal cell, then crossing to second vein, which it follows nearly to small cross-vein, then crossing to discal cell and following its front edge nearly to base of this cell, which it crosses and continues through extreme apex of second basal cell, middle of anal cell and encroaches slightly upon the axillary cell near its base; axillary cell and alulets very narrow; veins at bases of first submarginal and first posterior cells bordered with yellow, a yellow spot near middle of first basal cell. Length 9 mm.

Arizona. A single specimen.

Argyramœba varia Fabr.

Specimens of this European species were received from V. von Röder, of Germany, and agree in all respects with specimens collected by the writer in Southern California in May. It has not hitherto been recorded from this country.

ANTHRAX Scopoli.**Anthrax pertusa** Loew.

The characters accorded this species in my paper referred to below will require amending. Through the kindness of Mr. Samuel Henshaw, of the Museum Comparative Zoology, at Cambridge, Mass., I have been put in possession of a sketch of the right wing of the type of this species. This sketch reveals the fact that a very serious error occurs in Loew's original description (Diptera Am. Sept., Cent. viii, No. 18); in the fourth and fifth lines from the bottom of the description, for "base of anterior branch of the third vein," read "base of second vein,"—the brown color not extending to the base of the second submarginal cell.

The following table contains those species formerly placed in *Hemipenthes* (which, as stated above, is a synonym of *Anthrax*) as well as several additional species not given in my Revision of this genus (TRANS. Am. Ent. Soc. xix, 163-187). Bigot's *Anthrax fissus* (Ann. Soc. Ent. France, lxi, 354), is apparently a synonym of *A. dispar* Coq., while his *A. bifenestratus* (l. c. 356) appears to be the same as *A. nugator* Coq.

- | | |
|--|---------------------------|
| 1.—Wings more or less hyaline at the apex..... | 2. |
| Wings wholly blackish brown..... | pullata n. sp. |
| 2.—Brown of wings does not encroach upon apex of first submarginal cell..... | 4. |
| Brown of wings partially or entirely crosses apex of first submarginal cell..... | 3. |
| 3.—Knob of halteres and the legs black..... | latelimbatus Big. |
| Knob of halteres and the legs yellowish..... | sinuosa Wied. |
| 4.—Brown of wings not reaching base of second submarginal cell, except sometimes as a border to the third vein..... | 6. |
| Brown of wings encroaches upon base of second submarginal cell..... | 5. |
| 5.—Brown of wings reaches the hind margin in the fourth posterior cell. | |
| | melasoma Van d. W. |
| Brown of wings does not reach the hind margin in the fourth posterior cell. | castanipes Big. |
| 6.—Abdomen destitute of black tomentum..... | 7. |
| Abdomen furnished with black tomentum..... | 10. |
| 7.—Outline of brown of wings well defined, no brown clouds on veins at bases of second submarginal and second posterior cells..... | 8. |
| Outline of brown indistinct, brown clouds on veins at bases of second submarginal and second posterior cell..... | obscura n. sp. |
| 8.—Face slightly retreating below..... | 9. |
| Face much produced below, tomentum of abdomen pale yellow. | |
| | diagonalis Loew. |
| 9.—Tomentum of abdomen with a brassy or violaceous reflection, pile of front end of thorax black..... | levicula n. sp. |
| Tomentum of abdomen destitute of a metallic reflection, pile of front end of thorax yellow..... | pallidula n. sp. |

- 10.--Wings destitute of brown clouds on veins at bases of the second submarginal and second posterior cells.....11.
 Wings with brown clouds on these veins**nebulosa** n. sp.
- 11.--One-half of axillary cell hyaline, apex of anal cell broadly hyaline.....12.
 One-fourth or less of axillary cell hyaline, pulvilli large.....14.
- 12.--Veins at bases of first and fourth posterior cells not bordered with subhyaline13.
 Veins at bases of these cells bordered with subhyaline, pulvilli large, face retreating**catulina** n. sp.
- 13.--Light colored tomentum of body violaceous, face scarcely produced.
mobile n. sp.
 Light colored tomentum never violaceous, face greatly produced.
consul O. S.
- 14.--Brown of wings fills base of discal cell to the small cross-vein.....15.
 Brown of wings does not fill base of discal cell to the small cross-vein, cross-veins within the brown not distinctly bordered with subhyaline.
eumenes O. S.
- 15.--Sides of second abdominal segment furnished with black pile.....16.
 Sides of this segment destitute of black pile.....**seminigra** Lw.
- 16.--Knob of halteres largely yellow, brown in discal cell reaches beyond small cross-vein.....**morio** Linn.
 Knob of halteres wholly blackish, brown in discal cell does not pass beyond small cross-vein.....**catulina** n. sp.

Anthrax consul O. S.

A specimen from South Dakota (J. M. Aldrich), I refer with some doubt to this Central American species; the face and legs in my specimen are reddish.

Anthrax eumenes O. S.

Described from Mexico. I have collected it in various parts of California.

Anthrax morio Linn.

Specimens are in my collection from Maine, New Hampshire and Montana, which I am unable to separate from specimens of this European species received from V. von Röder, of Germany. *Anthrax morioides* Say is a synonym.

Anthrax pullata n. sp.--Black, the femora, tibiae and base of tarsi yellowish. Pile of head and on sides of abdomen, except on front angles of the first two segments black, that on front end of thorax, upper part of pleura and on breast mixed black and yellowish, on remainder of pleura mixed black and white; tomentum of face and occiput yellowish, that on the front, thorax, scutellum and abdomen coppery violaceous, on the last two mixed with black. Base of third antennal joint very short-conical, face retreating below, proboscis not projecting beyond the epistoma. Front tibiae provided with bristles, claws

of front tarsi small, pulvilli rather large. Wings wholly blackish brown. Length 10 mm.

Southern California. A single specimen in May.

Anthrax obscura n. sp.—Black, the first two antennal joints, face, lower fourth of front, femora, tibiæ and base of tarsi, yellow. Pile of front and face black, that of the body light yellow; tomentum of occiput white, that on front, face and entire body light yellow. Base of third antennal joint conical, face much produced below. proboscis projecting one-fourth its length beyond the epistoma. Front tibiæ provided with bristles, claws of front tarsi rather large, pulvilli wanting. Wings grayish hyaline at the apex, the base pale brownish, the outline of this color indistinct, the brown color darkest along the veins, reaching those at bases of the second submarginal and second posterior cells; somewhat darker clouds on veins at bases of the first, third and fourth posterior cells. Length 7 mm.

Southern California. A single specimen in May.

Anthrax levicula n. sp.—Black. Pile black, that at each hind angle of the thorax and on sides of first two abdominal segments largely white; tomentum obscure, brassy yellow or violaceous; bristles of thorax and scutellum black. Base of third antennal joint short-conical, face very slightly retreating below, proboscis not projecting beyond the epistoma. Front tibiæ destitute of bristles, claws of front tarsi rather large, pulvilli wanting. Wings hyaline at the apex, the base brown, filling basal third of marginal cell, bases of first submarginal, and of first posterior, basal half of discal cell to far beyond the small cross-vein, base of third and nearly the basal half of the fourth posterior cell, also the whole of the anal and axillary cells, but in the axillary cell the brown color is very faint. Length 5-6 mm,

Southern California. Three specimens in April and May.

Anthrax pallidula n. sp.—Black. Pile of head, breast and sides of abdomen, except on the first three segments, black, remaining pile of thorax and abdomen yellowish, bristles of thorax and scutellum also yellowish; tomentum of head golden-yellow, of thorax, scutellum and abdomen yellowish white. Base of third antennal joint elongate-conical, face very slightly retreating below, proboscis not projecting beyond the epistoma. Front tibiæ destitute of bristles, claws of front tarsi minute, pulvilli wanting. Wings hyaline at the apex, the base brown, the outline of this color extending from near apex of auxiliary vein transversely to the second vein, then basally a short distance, then transversely to the discal cell at its last fourth, then basally a short distance, then crossing the discal, base of third and basal fourth of posterior cell, beyond which the outline is indistinct; apical fourth of anal and whole of axillary cell hyaline; the brown fills base of discal cell to beyond the small cross-vein. Length 6 mm.

Southern California. A single specimen in September.

Anthrax nebulosa n. sp.—Black. Pile of head, breast largely, several on each end of thorax and that on sides of abdomen, except on the first two segments black, that on upper part of pleura and sides of first two abdominal segments, except the hind angle of the second, white; that on front end of

thorax yellowish; bristles of thorax yellow, those of the scutellum black; tomentum of front and face yellowish white, on the occiput white, on front end of thorax extending on sides above the wings white, remaining tomentum of thorax and on apical half of scutellum yellow, on base of scutellum white; tomentum on bases of second and third abdominal segments white, on base of fourth and whole of fifth and sixth yellow, that on apices of second, third and fourth black. Base of third antennal joint short-conical, face much produced below, proboscis not projecting beyond the epistoma. Front tibiae destitute of bristles, claws of front tarsi very small, pulvilli wanting. Wings grayish hyaline, costal, first basal and basal two-thirds of the marginal cell brown, a black cloud on veins at base of each submarginal and of each posterior cell, sometimes one at base of discal cell. Length 8 mm.

Southern California. Three specimens in July.

Anthrax catulina n. sp.—Black, the tibiae and base of tarsi yellow. Front and face yellow tomentose and black pilose, face retreating below. Proboscis not projecting beyond the epistoma. Third antennal joint short-conical at its base, the styliform portion slender and linear. Pile on front end of thorax yellow, that on the sides, on the pleura and breast, black and yellow. Abdomen somewhat abraded, black tomentum occurs on each segment; pile on sides of first segment yellow, on the remaining segments largely black. Front tibiae provided with bristles, claws of front tarsi small, pulvilli distinct. Knob of halteres black. Wings hyaline at apex, the base blackish brown, the outline of this color extending from near apex of first vein transversely to second vein, then basally to a point opposite apex of discal cell, then transversely to last eighth or tenth of that cell, then basally to small cross-vein, then transversely to fourth posterior cell slightly beyond base of the third, crossing the fourth near its middle and following the penultimate vein to or near base of the fourth posterior cell, then crossing to the hind margin near the middle or last fourth of the axillary cell; veins at bases of the first submarginal, first and fourth posterior cells distinctly bordered with subhyaline. Length 5-10 mm.

Washington (O. B. Johnson) and Northern California. Four specimens.

Anthrax mobile n. sp.—Black, the legs brownish. Pile of head and body black, that on front end of thorax mixed with white, a cluster of white pile at each hind angle of thorax and another on each side of the first abdominal segment; tomentum of head and body violaceous, that on the head and abdomen mixed with black, on the venter black. Base of third antennal joint very short-conical, the styliform portion slender and linear; face slightly produced below, proboscis not projecting beyond the epistoma. Front tibiae destitute of bristles, claws of front tarsi small, pulvilli minute. Wings hyaline at the apex, the base black, the outline of this color extending from apex of auxiliary vein transversely to second vein, then basally nearly to base of first submarginal cell, then transversely to discal cell slightly beyond the small cross-vein, then basally to first fourth of the discal cell, then crossing this cell and base of fourth posterior cell, then going basally along the penultimate vein to its middle, then crossing the anal and axillary cells slightly before the middle of each. Length 7 mm.

Southern California. A single specimen in May.

EXEPACMUS n. gen.

Head conical, the face greatly produced forward and on a plane with the anterior three-fourths of the front. Eyes bare, widely separated in the ♀. Antennæ scarcely one-fourth length of head; first joint nearly as long as broad, second twice as broad as long, the third joint three times as long as wide, twice as long as the first two taken together, narrowed on its apical two-thirds, except a slight expansion at the last two-thirds of its length; apex of the third joint rounded, beset with very short hairs, and in the centre bearing a slender, blunt-pointed style, which is one-sixth as thick as the apex of the third joint, and is one-tenth as long as this joint. Proboscis not projecting beyond the epistoma, labellæ well developed; palpi slender, one-half as long as the proboscis. Thorax, scutellum and legs furnished with bristles, pulvilli present, empodium wanting. Scutellum evenly convex, rounded behind. Wings with three submarginal and four posterior cells, all of the latter open, as is also the anal; furcation of the second and third veins occurs slightly beyond the base of the discal cell; small cross-vein situated beyond the middle of the discal cell; anterior branch of the third vein connected with the second by a cross-vein; second vein and anterior branch of the third not strongly bent forward at their tips.

Exepacmus johnsoni n. sp. ♀.—Opaque black, the face, first two antennal joints, palpi, halteres, apex of abdomen, femora, tibiæ and tarsi, except the last two joints, yellow. Pile and tomentum of front yellowish, a few black ones on the vertex; face nearly naked; pile of occiput and of palpi yellowish; tomentum of thorax yellowish, the erect pile black; bristles of thorax and scutellum reddish; a stripe of short white pile extends from humeri to each wing; pile and tomentum of the somewhat abraded abdomen appears to have been entirely yellow; bristles of legs black, all the femora and tibiæ provided with bristles, the underside of each hind femur bearing a row of six bristles. Wings hyaline, the subcostal cell yellow. Length 7 mm.

California (O. B. Johnson).

PLOAS Latr.

The following table includes all the species at present known to occur in America north of Mexico:

- | | |
|--|-------------------------|
| 1.—Wings hyaline, or with the black of base gradually evanescent posteriorly.. | 2. |
| Wings black and hyaline, the black reaching apex of anal cell; scutellum and abdomen opaque..... | fenestrata O. S. |
| 2.—Abdomen wholly opaque..... | 3. |
| Abdomen partly shining..... | 6. |

- 3.—Scutellum wholly opaque.....4.
 Scutellum shining.....**atradula** Loew.
- 4.—Pile of antennæ and face largely black, wings blackish in front.....5.
 Pile of antennæ, head, thorax and scutellum white or yellowish; wings hyaline, the cross-veins bordered with brown.....**limbata** Loew.
- 5.—Pile of thorax and scutellum largely black, costa of male furnished with teeth-like projections.....7.
 Pile of thorax and scutellum largely yellowish, costa destitute of teeth-like projections.....**serrata** n. sp.
 Pile of thorax and scutellum largely yellowish, costa destitute of teeth-like projections.....**melanocerata** Bigot.
- 6.—Abdomen having each segment partly opaque.....7.
 Abdomen, except first segment, wholly shining greenish blue, halteres black.
amabilis O. S.
- 7.—Knob of halteres partly or wholly yellow.....8.
 Knob of halteres wholly black, pile of antennæ and face black.
obesula Loew.
- 8.—Pile of thorax and basal half of abdomen wholly yellowish red.
rufula O. S.
 Pile of thorax and abdomen mixed black and yellowish.
nigripennis Loew.

Ploas serrata n. sp. ♂ ♀.—Opaque black, the halteres yellow. Pile of antennæ, face, lower half of occiput (usually) and many on upper half, on thorax, scutellum and abdomen black, that on upper half of occiput, on chin, coxæ and on sides of basal half of abdomen largely yellow, that on sides of thorax in the female yellow; appressed tomentum of head and body yellow. Wings hyaline, the base smoky brown, this color gradually evanescent posteriorly, leaving a brown cloud on veins at bases of first and fourth posterior cells; costa of male furnished with small, teeth-like projections. Length 6–11 mm.

Southern California. Seven males and seven females in April, May and December.

PHTHIRIA Meigen.

The following table contains all the species known to occur in this country north of Mexico.

- 1.—Wings, except sometimes in the costal cell, hyaline.....2.
 Wings marked with brown clouds or spots.....8.
- 2.—Body more or less black.....3.
 Body wholly yellow, only the proboscis and tips of tarsi black,
sulphurea.
- 3.—Head, thorax and sometimes the abdomen marked with yellow (females)...4.
 Head, thorax and abdomen wholly black.....6.
- 4.—Antennæ black, sides of face not spotted.....5.
 Antennæ largely yellow, sides of face marked with two black spots (four in all).....**notata**.
- 5.—Scutellum and dorsum of thorax wholly black.....**florale** n. sp.
 Scutellum partly yellow.....11.
- 6.—Thorax and scutellum opaque.....7.
 Thorax and scutellum shining, pile of head and body white.
diversa n. sp.

- 7.—Pile of head, thorax and scutellum largely black.....**simile** n. sp.
 Pile of head and body whitish (males).**humilis**.
 8.—Wings with about six brown spots on each, body not marked with black..9.
 Wings with more than six brown spots.....10.
 9.—Cheeks wholly light yellow.....**sulphurea**.
 Cheeks largely dark brown.....**scolopax**.
 10.—Face with a large black spot each side.....**punctipennis**.
 Face destitute of black spots**egerminans**.
 11.—Sides of scutellum and of face wholly yellow.....**diversa** n. sp.
 Sides of scutellum and of face largely black**humilis**.

Phthiria simile n. sp. ♂.—Wholly opaque velvet-black, except the yellow stalk, and sometimes the knob of halteres; pile of head, thorax and scutellum black, that of abdomen and legs whitish; proboscis projecting nearly half its length beyond tip of antennæ; palpi nearly half as long as proboscis; first antennal joint nearly twice as long as the second, the latter as wide as long, the third twice as long as the first two, in outline oblanceolate, bearing on its upper side just before its apex two short, slender, styliform processes, their tips reaching nearly as far forward as the tip of this joint, the one nearest the tip yellowish; on upperside of third antennal joint are three or four rather stout bristles, which are nearly half as long as this joint. Wings hyaline, apical half of subcostal cell yellow. ♀ same as the ♂, except that the color is more gray, with three brownish stripes on the thorax, pile of occiput and several on thorax and scutellum white, the bristles on upperside of third antennal joint only one-sixth as long as that joint. Length 3-5 mm.

Southern California. Six males and five females in February.

Phthiria florale n. sp. ♀ same as ♀ of *simile*, with these exceptions: Sides of face, humeri and spot above each coxa yellow, that above middle coxæ double; pile of head, body and legs yellow; first antennal joint scarcely longer than the second, the third nearly three times as long as the first two, of nearly an equal width, but the last third tapering slightly to the tip, which is obliquely truncated, its upper angle prolonged, while beneath it is a short, slender, styliform process; upperside of this joint destitute of long bristles; proboscis projecting two-thirds its length beyond tip of antennæ; palpi scarcely one-eighth as long as proboscis. Length 5 mm.

Southern California. A single specimen in July.

Phthiria diversa n. sp. ♂.—Black, the thorax and scutellum shining, the halteres, extreme apex of femora, and sometimes the tibiæ except at apex, yellow; pile of head and entire body white; proboscis projecting half its length beyond tip of antennæ; palpi one-fourth as long as proboscis; first antennal joint one and a half times as long as the second, the third nearly three times as long as the first two, but slightly widening outwardly, furnished with two small styliform processes on the upperside just before the apex, upperside of this joint bearing about eight bristles, the longest of which is one-fifth as long as this joint. Wings hyaline, apical half of subcostal cell yellow.

♀.—Head yellow, a large spot at base of antennæ usually extending as a narrow irregular stripe to occiput, black; antennæ, proboscis, palpi and middle of occiput black; thorax shining black, two subdorsal yellow lines greatly enlarged

at their posterior ends; lateral margins of thorax, extending on pleura in front of each wing and at front end, where it expands in a spot above front coxæ, also a stripe above middle and hind coxæ and spot in front of halteres yellow; scutellum yellow, black at base. Abdomen black, hind margin of each segment broadly yellow; halteres yellow; tibiæ and femora, except sometimes basal three-fourths of hind femora, yellow. Wings and antennæ as in the male. Length 3-4 mm.

Southern California. Eighteen males and twenty-one females in May. All of these with the exception of two of the females were captured at the same time and place, and notwithstanding the difference in color, are evidently the opposite sexes of the same species.

Phthiria humilis O. S.

Osten Sacken described the male; two females captured at the same time and place as a male have the following parts dull yellow: upper half of front (except the ocellar triangle) occipital orbits narrowly, but widening below, narrow lateral margin of thorax, except above wings, spot above front coxa and another in front of halteres, scutellum except the sides, also a narrow hind border to each segment of the abdomen.

EPACMUS O. S.

Epacmus concinnus Coq., *pellucidus* Coq., *transitus* Coq. and *fumosus* Coq. belong to the genus *Aphæbantus*. In referring them to *Epacmus* I was misled by Osten Sacken's tables, where the absence of pulvilli is given as the distinguishing feature,—a very unreliable character, causing the separation into different genera of species which are very closely related. The structure of the face is a more satisfactory character—concave and projecting below in *Epacmus*, convex and retreating below in *Aphæbantus*. Bigot's *Epacmus rufofimbriatus* (Ann. Soc. Ent. France, lxi, 359), in which the proboscis equals the thorax and abdomen in length, may belong to *Aphæbantus*. If this surmise is correct, we then have only two species of *Epacmus* in North America,—*E. modestus* Loew and the following:

Epacmus nebritus n. sp. ♂ ♀.—Black, the oral margin, tibiæ and base of tarsi reddish, knob of halteres dark brown. Pile of head, thorax and abdomen yellow or white, bristles of thorax, scutellum and legs reddish; scales of front and face quite dense, whitish, those of thorax brown and whitish, the brown forming four stripes; scutellum shining, the hind edge emarginate, nearly the entire surface covered with rather long reddish bristles and yellowish scales, the hind edge bare, except in the middle and at the extreme base; scales of abdomen brown, those at apex of first segment and base of second white; eyes of

male separated nearly one-third width of ocellar tubercle; thickened basal portion of third antennal joint long-conical, the robust styliform portion scarcely one-half as long as the thickened basal part; face much produced below, proboscis projecting half the length of the labellæ beyond the epistoma. Wings hyaline, apical two-thirds of subcostal cell yellow; hind femora with several short bristles, but no long hairs below; middle femora with one or more bristles, front femora destitute of bristles. Length 7-10 mm.

Southern California. Five males and five females, in April and May.

This is the form described in my Monograph ("Can. Ent.," May, 1886) as *Leptochilus modestus* Loew, but it differs from that species in the structure of the antennæ, separated eyes of the male, and in having no black scales on the abdomen.

APHÆBANTUS Loew.

As stated above, *Epacmus concinnus*, *pellucidus*, *transitus* and *fumosus* belong to *Aphæbantus*, and I suspect that *Epacmus rufolimbatus* Bigot should also be referred to the same genus. These and the other species known to occur in this country north of Mexico are included in the following table. *Aphæbantus rattus* O. S., from Texas, belongs to the genus *Eucessia*. *A. squamosus* Coq. is a synonym of *A. marcidus* Coq.

- 1.—Ground color of abdomen black.....3.
Ground color of abdomen yellow, wings hyaline.....2.
- 2.—Antennæ having the two basal joints yellow, scales of abdomen yellow, except a cross-band of white scales on second segment.....**concinnus** Coq.
Antennæ wholly black, scales of abdomen yellow, except those on extreme apex of each segment, which are white.....**varius** Coq.
- 3.—Proboscis never projecting more than the length of its labellæ beyond the epistoma.....5.
Proboscis projecting at least one-half its length.....4.
- 4.—Face black, proboscis shorter than thorax and abdomen, no brown cloud on the small cross-vein.....**litus** Coq.
Face red, proboscis as long as the thorax and abdomen, a brown cloud on the small cross-vein.....**rufolimbatus** Eigt.
- 5.—Thorax destitute of vittæ of white scales.....6.
Thorax with two vittæ of white scales, front concealed under a dense covering of scales, hind margin of scutellum opaque and scaly.....**vittatus** Coq.
- 6.—Wings, except sometimes the subcostal cell, hyaline.....7.
Wings brown on basal portion, abdomen destitute of black scales.....26.
- 7.—Pile of face and front largely or wholly black, knob of halteres light yellow.....8.
Pile of face white or yellowish.....10.

- 8.—Abdomen furnished with black scales.....9.
 Abdomen destitute of black scales.....**tardus** Coq.
- 9.—Hind femora with long hairs besides the bristles below, face sparse, yellowish tomentose.....**desertus** Coq.
 Hind femora with bristles, but no long hairs below, face destitute of tomentum.....**scriptus** Coq.
- 10.—Abdomen destitute of black scales.....11.
 Abdomen furnished with black scales.....14.
- 11.—Pile of front white or yellow.....12.
 Pile of front black.....24.
- 12.—Styliform portion of third antennal joint as long as the thickened basal part, scales of front usually sparse.....13.
 Styliform portion two-thirds as long as the thickened basal part, front concealed beneath a dense covering of white scales, knob of halteres light yellow .. **pavidus** Coq.
- 13.—Hind femora with at the most some bristles, but no long hairs below.....20.
 Hind femora with many long hairs below, hypopygium not longer than last two segments.....**marcidus** Coq.
- 14.—Knob of halteres largely or wholly light yellow17.
 Knob of halteres dark brown.....15.
- 15.—Styliform portion of third antennal joint scarcely longer than the thickened basal part.....16.
 Styliform portion twice as long as the thickened basal part, cross-bands of black scales on abdomen of female not interrupted in the middle.
mus O. S.
- 16.—Cross-bands of black scales on abdomen of female interrupted in the middle.
interruptus Coq.
 Cross-bands not interrupted.....**brevistylus** Coq.
- 17.—Styliform portion of third antennal joint twice as long as the thickened basal part.....22.
 Styliform portion scarcely longer than the thickened basal part.....23.
- 18.—Cross bands of black scales on abdomen of female more than four times as broad as those of light-colored scales.....**carbonarius** O. S.
 Cross-bands of black scales scarcely wider than those of light-colored scales, abdomen of male broad and elliptical.....**hirsutus** Coq.
- 19.—Pile of face golden-yellow**capax** Coq.
 Pile of face white.....**mixtus** Coq.
- 20.—Hypopygium of male more than one-half as long as the abdomen, pile of face white, hind margin of scutellum opaque and scaly.
abnormis Coq.
 Hypopygium very small.....21.
- 21.—Knob of halteres largely dark brown, pile of face yellowish white, hind margin of scutellum shining and bare, except in the middle.
conurus O. S.
 Knob of halteres light yellow.....25.
- 22.—Pile of front black.....18.
 Pile of front white, hind margin of scutellum shining..... **catulus** n. sp.
- 23.—Pile of front black, hind margin of scutellum subopaque and scaly.....19.
 Pile of front white, spots of black scales on abdomen, in two rows.
vulpecula n. sp.

- 24.—Knob of halteres yellow, scales of abdomen brown, hind margin of scutellum opaque.....**cervinius** Loew.
 Knob of halteres black, scales of abdomen brown and white, hind margin of scutellum shining.....**conurus** O. S.
- 25.—Face much retreating below, its pile deep golden-yellow.....**capax** Coq.
 Face not retreating, its pile never deep golden-yellow.....29.
- 26.—Pile of front partly black.....27.
 Pile of front wholly white or yellowish, hind margin of scutellum opaque and scaly28.
- 27.—Hind margin of scutellum bare and shining.....**transitus** Coq.
 Hind margin of scutellum opaque and scaly**fumosus** Coq.
- 28.—Styliform portion of third antennal joint not longer than the thickened basal part, second basal cell almost hyaline.....**fumidus** Coq.
 Styliform portion nearly twice as long as the basal portion, second basal cell distinctly brown.....**fucatus** n. sp.
- 29.—Scutellum and thorax destitute of bristles.....**pellucidus** Coq.
 Scutellum and thorax bristly.....**leviculus** n. sp.

Aphæbantus catulus n. sp. ♂.—Black, the halteres yellow. Pile and bristles of head, body and legs white or yellowish, the scales also white or yellowish, except a broad stripe of largely black scales in the middle of dorsum of abdomen, sometimes reduced to a row of spots, one to each of the segments two to five; styliform portion of third antennal joint nearly twice as long as the thickened basal part, face greatly retreating below, proboscis not projecting; scutellum rounded behind, bristly, shining, the margin destitute of scales; hind femora with numerous long hairs, and sometimes a few bristles below. Wings pure hyaline, apical two-thirds of subcostal cell yellow. Length 5-9 mm.

Southern California. Eleven specimens, in April and May.

Aphæbantus vulpecula n. sp. ♂ ♀.—Same as *catulus* with these exceptions: Tibiæ and base of tarsi sometimes yellow; black scales on abdomen forming a transverse pair of spots on each of the segments two to four, and sometimes on five and six; styliform portion of third antennal joint scarcely longer than the thickened basal part; proboscis slightly projecting beyond the epistoma; hind femora with several short bristles, but no long hairs below. Length 6 mm.

Southern California. Three males and three females, in April and May.

Aphæbantus leviculus n. sp. ♂ ♀.—Same as *catulus*, except the following: Tibiæ and base of tarsi sometimes yellow; abdomen destitute of black scales; styliform portion of third antennal joint only as long as the thickened basal part; face not retreating below, almost perpendicular; hind margin of scutellum scaly; hind femora with a few bristles, but no long hairs below. Length 4-6 mm.

Southern California. Five males and five females, in April and May.

Aphoebantus fucatus n. sp. ♂.—Black, knob of halteres, tibiæ and base of tarsi yellowish. Pile of head and body, also bristles and scales of thorax and scutellum, and scales of abdomen, white or yellowish; front and face destitute of scales, face unusually short, slightly retreating below, proboscis projecting the length of its labellæ beyond the epistoma; styliform portion of third antennal joint twice as long as the thickened basal part; scutellum opaque, rounded behind, whole surface pilose and scaly; wings hyaline, the costal, first and second basal, anal except at apex, also bases of marginal, first submarginal and of axillary cells, smoky brown; hind femora with several long hairs below; eyes of male contiguous. Length 4 mm.

Southern California. Three males, in April.

THLIPSOGASTER Rondani.

Two species, which I refer to this genus, possess the following characters in common: Eyes contiguous in the male, widely separated in the female; three ocelli present. Antennæ as long as the head, first joint slender, not thicker than the second, the latter a trifle longer than wide, the third slightly longer than the first two, bare; terminal style very small, tipped with a minute bristle. Front flat, face projecting on same plane as the front. Proboscis projecting beyond tip of antennæ, labellæ narrow, palpi not reaching oral margin. Scutellum convex. One marginal, two submarginal and four posterior cells, the first posterior cell closed at or near the margin of the wing, the other posterior cells open, as is also the anal; first basal cell slightly longer than the second, last section of the fourth vein straight, no cross-vein connecting the anterior branch of the third vein with the second or third veins; furcation of second and third veins occurs before the base of the discal cell; marginal cell not greatly expanded at its apex, second vein meeting the costa at an acute angle. All tibiæ and the posterior femora provided with bristles, pulvilli distinct, no empodium.

Thlipsogaster syndesmus n. sp. ♂ ♀.—Opaque black, the front, face, cheeks, first two antennal joints, palpi, femora, tibiæ, base of tarsi, halteres, entire abdomen of female, but only the apex in the male, yellow. Pile and tomentum of front, face and antennæ yellow in the female, that on ocellar triangle, antennæ and face largely black in the male; a dense cluster of snow-white tomentum on each side of antennæ; pile and tomentum of occiput, thorax, pleura, coxæ, scutellum, abdomen and venter yellowish white, bristles of legs black. Wings hyaline, costal cell yellowish. Length 5-6 mm.

Southern California. One male and three females.

Thlipsogaster ater n. sp. ♂.—Opaque black, the tibiæ, apex of femora and base of tarsi, yellow; knob of halteres dark brown. Pile and tomentum

of head and entire body yellow, except the pile on ocellar triangle, antennæ, face, and many on the pleura and coxæ, which are black, a dense cluster of snow-white tomentum on each side of the antennæ; bristles of legs black. Wings hyaline, costal cell yellowish. Length 6 mm.

Louisiana (Morrison). Three specimens.

GEMINARIA n. gen.

Body slender, head much broader than high, eyes contiguous in the male, widely separated in the female; antennæ longer than the head, first joint as long as the third, not more robust than the second, the latter scarcely longer than broad; third joint tapering on its apical half, the apex blunt and destitute of a style; proboscis projecting forward, slightly longer than the head and thorax united; palpi cylindrical, reaching slightly beyond tip of antennæ; scutellum divided by a deep, longitudinal groove into two hemispheres; furcation of second and third vein occurs before base of discal cell; first basal cell much longer than the second; anterior branch of third vein connected with the second by a cross-vein, forming three sub-marginal cells; second vein before its apex abruptly bent forward nearly at a right angle, marginal cell greatly expanded at its apex; four posterior cells, all of them open, as is also the anal; costa in the male furnished with small, teeth-like processes; tibiæ bristly, pulvilli present, no empodia. Type, *Lordotus canalis* Coq.

Geminaria pellucida n. sp.—Same as *canalis*, with these exceptions: Eyes destitute of a purplish line,—present in *canalis*, dividing each eye into two parts (an upper and a lower) of nearly an equal size. Wings with only two brown clouds, situated at bases of first and fourth posterior cell, whereas in *canalis* there are at least eight brown spots in each wing. Length 6 mm.

Southern California. A single male, in May.

LORDOTUS Loew.

The North American species are as follows:

- 1.—Second antennal joint nearly twice as long as broad, costa of male beset with teeth-like processes, pile of face and breast wholly white or yellowish..2.
Second antennal joint scarcely longer than wide.....4.
- 2.—Wings having the first basal cell and base of the marginal yellowish.....3.
Wings, except in the costal cell, wholly hyaline, abdomen destitute of a cross-band of black pile.....**diversus** Coq.
- 3.—Femora wholly yellow, a cross-band of black pile on the fourth abdominal segment.....**zona** Coq.
Femora partly black.....**gibbus** Loew.

- 4.—Wings, except in the costal cell, wholly hyaline.....6.
 Wings marked with brown in other portions than the costal cell, breast destitute of black pile..... 5.
 5.—Wings hyaline, costal, first basal, base of marginal and of first submarginal cell brown, a brown cloud at base of fourth posterior cell.

bucerus n. sp.

Wings hyaline, marked with several brown clouds, costa of male destitute of teeth-like processes.....**planus** O. S.

- 6.—Pile of face, breast and venter white or yellowish.....7.
 Pile of face, antennæ, breast and venter largely black, costa of male destitute of teeth-like processes.....**apicula** Coq.
 7.—Abdomen shining, its tomentum confined to the sutures of the segments, proboscis scarcely longer than the thorax.....**miscellus** Coq.
 Abdomen subopaque, uniformly tomentose, proboscis nearly as long as the thorax and abdomen united, costa of male destitute of teeth-like processes.....**juncus** Coq.

Lordotus bucerus n. sp. ♀.—Black, the knob of halteres yellow. Pile of head yellowish, that on upperside of first and on both sides of second antennal joint, also that on palpi black; pile of thorax, scutellum and abdomen yellow, except on posterior half of fourth segment, which is black; the appressed, crinkled tomentum whitish; wings hyaline, costal, first basal, basal two-thirds of marginal and base of first submarginal cell smoky-brown; veins at base of first and fourth posterior cells clouded with brown; second antennal joint scarcely longer than broad. Length 10 mm.

Southern California. Two males, in April. Nearest related to *gibbus* Loew, but with a shorter second antennal joint, pile of antennæ largely black, instead of being wholly yellow, and the tibiæ are black instead of yellow; the thorax is also much less gibbous.

BOMBYLIUS Linn.

Bombylius fratellus Wied. is a synonym of *B. major* Linn. Both of these forms occur in California as well as in the Atlantic States and in Germany; every possible gradation occurs between them, so that *fratellus* cannot even be regarded as a variety.

ANASTÆCHUS O. S.

Anastæchus barbatus O. S. is a synonym of *A. nitidulus* Fabr. Specimens of this latter were received from V. von Röder, of Germany, and agree in all respects with my Colorado examples.

GERON Meigen.

Geron albidipennis and *G. vitripennis* are synonyms of *Geron senilis*. *Geron macropterus* is the male of *calvus*. *G. holosericeus* Walker has not been identified. The other species from North America are contained in the following table:

- 1.—Last section of third vein as long as the preceding section.....4.
 Last section of third vein never more than two-thirds as long as the preceding section, third antennal joint narrow and tapering to the tip, palpi never reaching beyond epistoma.....2.
- 2.—Femora largely or wholly black.3.
 Femora yellow, front of female yellow tomentose in the middle.
? rufipes Macq.
- 3.—Front of female wholly white tomentose, small cross-vein distinctly beyond middle of discal cell.....**senilis** Fabr.
 Front of female yellow tomentose in the middle, small cross-vein in middle of discal cell**subauratus** Loew.
- 4.—Abdomen slender, nearly four times as long as wide, palpi never projecting beyond epistoma.....5.
 Abdomen robust, never more than twice as long as wide, third antennal joint never sharp pointed.....6.
- 5.—Femora and base of venter largely yellow.....**calvus** Loew.
 Femora and venter wholly black.....**hybus** n. sp.
- 6.—Abdomen opaque.....7.
 Abdomen shining black, the segments margined behind with yellow.
cinctura n. sp.
- 7.—Abdominal segments never bordered posteriorly with yellow.....8.
 Abdominal segments bordered posteriorly with yellow... **fasciola** Coq.
- 8.—Palpi less than one-fourth as long as the proboscis.....**trochilus** n. sp.
 Palpi more than one-half as long as the proboscis.....**capax** Coq.

Geron trochilus n. sp. ♂ ♀.—Opaque, black, only the halteres yellowish white. Head and body gray pollinose, a short vitta in front of ocelli in the female, four stripes on the thorax, extreme base of scutellum greatly expanded backward in the middle, and extreme base of each abdominal segment, opaque black; pile of head and body, and of all their members, whitish. First antennal joint slightly over twice as long as the second, the third joint more than twice as long as the first, of nearly an equal width, slightly widest just before the middle, the apex rounded, except at the upper angle, which is cut away, the portion thus cut out nearly equaling one-third the width of the joint; on upper-side of third joint near its base are four or five stout bristles, which are about one-fourth as long as the width of this joint; bristles on upperside of first joint (there are none on the underside) shorter than the width of this joint. Proboscis as long as the head and thorax united. Wings hyaline, apex of subcostal cell yellowish, last two sections of third vein subequal in length, apex of second submarginal cell less than half the length of that cell, posterior cross-vein strongly bowed outwardly. Length 3-5 mm.

Southern California. One male and two females, in April.

Geron cinctura n. sp. ♀.—Same as *trochilus*, with these exceptions: Apex of each abdominal segment, both dorsally and ventrally, except the first one, yellowish white. Body shining, except the pleura, scutellum, three stripes in middle of thorax and its lateral margins, which are lightly gray pollinose; third antennal joint one and a half times as long as the first, destitute of bristles, first joint with bristles on both its upper and lower sides, many of these being three times as long as the width of this joint.

♂.—Same as the ♀, except that the bristles of antennæ, pile of face and several on the vertex are black and the thorax is destitute of stripes of gray pollen. Length 4 mm.

Southern California. A single male and female, in April and July.

Geron hybus n. sp. ♂ ♀.—Opaque black, knob of halteres light yellow. Head and body light gray pollinose, two spots on upper part of occiput, two stripes on thorax, scutellum, except each side, and abdomen except first segment, opaque black. Pile and tomentum of head white, a few of the pile on antennæ and occiput black; depressed tomentum on upperside of body of female yellow (wanting in the male), the pile white, with a few black ones intermixed. First antennal joint over twice as long as the second, both are provided with bristles above and below; the female these scarcely exceed the length the width of these joints, but in the male they are nearly three times as long; third joint three times as long as the first, gradually tapering to the tip, destitute of bristles. Proboscis slightly longer than the thorax. Wings hyaline, apex of subcostal cell yellowish, last two sections of the third vein subequal in length, posterior cross-vein sinuous. Length 4 mm.

Southern California. Three males and four females, in July.
